

Listing of the Claims:

1. (Currently Amended) A sensitive system for detecting at least one of chemical ~~and/or~~ and physical states or state changes within substance or mixtures of substances, characterized in that

a sensitive membrane or layer-(1) is disposed on or in an element (3) replaceably connectable to a cannula-(2), the element with cannula (2) being introducible into a medium under measurement and forming an optical connection to an optical sensor system-(4).

2. (Original) The system according to claim 1 characterized in that the optical sensor system has at least one optical detector and a light source.

3. (Currently Amended) The system according to claim 1 ~~or 2~~, characterized in that the cannula is hollow throughout inside and forms an optical waveguide or at least one optical waveguide-(5) is guided through.

4. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that state changes within ~~the a~~ package are detectable with the membrane or layer by interferometry, using surface plasmon resonance, spectroscopic methods or luminescence intensity change.

5. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that chemical concentrations, in particular at least one of hydrocarbon concentrations, hydrogen concentrations, oxygen concentrations, water content ~~and/or~~ and physical parameters, in particular pressure or temperature, are detectable by layer thickness changes, luminescence changes, changes of refractive index or changes of absorption, transmission, reflectivity or the change of color of the ~~layer/membrane (1)~~ layer or membrane.

6. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that one or more ~~dye(s)~~ dyes or selective markers are contained in the membrane or layer.

7. (Currently Amended) The system according to claim 6, characterized in that the marker or dye is sensitive dependently on concentration or dependently on one of temperature ~~or~~ and pressure.

8. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that the connectable element has a piercing protection ~~(8)~~ and at least one opening ~~(9)~~.

9. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that the connectable element ~~(3)~~ comprises at least one optical element ~~(6)~~.

10. (Currently Amended) The system according to claim 9, characterized in that the optical element ~~(6)~~ is one of a fiber optic system, a GRIN lens, an optical rod, a disk or an optical lens.

11. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that the ~~membrane/layer~~ membrane or layer is formed directly ~~on/in a fiber optic system/optical system~~ in or on one of a fiber optic system and a fiber optical system.

12. (Currently Amended) The system according to ~~any of the previous claims~~ claim 3 characterized in that the ~~membrane/layer~~ ~~(1)~~ membrane or layer is incorporated directly into the ~~hollow cannula/needle~~ ~~(2)~~ cannula.

13. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that the ~~membrane/layer (1)~~ membrane or layer is incorporated directly in the ~~hollow element (3)~~ wherein said element is hollow.

14. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that the ~~membrane/layer (1)~~ membrane or layer is an optical contact with a fiber optic system/optical system or optical system.

15. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that the ~~membrane/layer~~ membrane or layer is applied to a filler ~~(7)~~.

16. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that the ~~membrane/layer~~ membrane or layer is fixed on an adhesive film.

17. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that a calibration can be effected upon closing by a defined change of the measurand, for example by including one of a vacuum or and an excess pressure, a supply of gas or and a temperature change.

18. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that at least one optical or chemical protective ~~layer(s)~~ layer is applied to the ~~membrane/layer (1)~~ membrane or layer.

19. (Currently Amended) The system according to claim 18, characterized in that at least one permeable metal ~~and/or~~ and dielectric layer, lacquer layer, ~~in particular~~ consisting of synthetic resin lacquer or acrylic lacquer, PTFE or PTFE-base protective layer is formed.

20. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that at least one of the ~~membrane/layer (1) and/or~~ membrane or layer and the element ~~(3)~~ to be slipped on is at least one of ~~disinfectable or~~ and sterilizable.

21. (Currently Amended) The system according to ~~any of the previous claims~~ claim 1, characterized in that the element ~~(3)~~ is adapted to be slipped or screwed onto the cannula ~~(2)~~ for connection.

22. (Currently Amended) The system according to claim 21, characterized in that ~~it~~ the connection involves a Luer lock connection.